

299-W18-78 (A7561) Log Data Report

Borehole Information:

Borehole: 299-W18-78 (A7561)			Site: 216-Z-1A Crib			
Coordinates (WA St Plane)		GWL ¹ (ft): None		GWL Date: 09/13/06		
North (m)	East (m)	Drill Date	TOC Elevation	Total Depth (ft)	Type	
135441.801	566548.713	03/67	674.56 ft	17.0	Cable	

Casing Information:

Casing Type	Stickup (ft)	Outer	Inside	Thickness (in.)	Top (ft)	Bottom (ft)
		Diameter (in.)	Diameter (in.)			
Steel	0	6 5/8	6	5/16	0	17

Borehole Notes:

The logging engineer measured the casing diameter using a steel tape. Logging data acquisition is referenced to the top of casing, which is approximately at ground surface. During drilling, contamination was encountered at 17 ft. The maximum depth of the current logging is 13.7 ft.

Logging Equipment Information:

Logging System: Gamma 1E		Type: SGLS (70%) SN: 34-TP40587A
Effective Calibration Date: 05/02/06	Calibration Reference: DOE-EM/GJ1200-2006	
Logging Procedure: MAC-HGLP 1.6.5, Rev. 1		

Spectral Gamma Logging System (SGLS) Log Run Information:

Log Run	1	2			
Date	09/14/06	09/14/06			
Logging Engineer	Spatz	Spatz			
Start Depth (ft)	0.0	13.5			
Finish Depth (ft)	13.0	13.5			
Count Time (sec)	200	1000			
Live/Real	R	R			
Shield (Y/N)	N	N			
MSA Interval (ft)	1.0	1.0			
ft/min	N/A ²	N/A			
Pre-Verification	AE190CAB	AE190CAB			
Start File	AE190000	AE190018			
Finish File	AE190017	AE190018			
Post-Verification	AE191CAA	AE191CAA			
Depth Return Error (in.)	N/A	0			
Comments	No fine-gain adjustment.	No fine-gain adjustment.			

Logging Operation Notes:

Logging was conducted with no centralizer on the sonde. Data were collected at a 1000 second counting time at the bottom of the borehole at 13.5 ft.

Analysis Notes:

Analyst:	Henwood	Date:	11/24/06	Reference:	GJO-HGLP 1.6.3, Rev. 0
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Pre-run and post-run verifications for the logging system were performed before and after the day's data acquisition. The acceptance criteria were met.

A casing correction for a 5/16-in. thick casing was applied to the SGLS data.

SGLS spectra were processed in batch mode using APTEC SUPERVISOR to identify individual energy peaks and determine count rates. Concentrations were calculated with an EXCEL worksheet template identified as G1EMay06.xls using an efficiency function and corrections for casing and dead time as determined from annual calibrations.

Results and Interpretations:

²³⁹Pu, ²⁴¹Am, and ²³⁷Np were detected. The gamma energy lines used for the assays of ²³⁹Pu, ²⁴¹Am, and ²³⁷Np were the 375.05, 662.40, and 312.17 keV, respectively. The 312.17 keV gamma energy line results from the decay of ²³³Pa, a daughter of ²³⁷Np.

²³⁹Pu is detected at 13 and 13.5 ft with at a maximum concentration of approximately 25,000 pCi/g.

²⁴¹Am is detected from 12 to 13.5 ft at a maximum concentration of approximately 85,000 pCi/g.

²³⁷Np is detected from 11 to 13.5 ft at a maximum concentration of approximately 6 pCi/g.

A gamma line at 2223.2 keV is detected at 13.5 ft. This line reflects a hydrogen capture gamma ray caused by interaction with neutrons. The neutrons are generated by the α, n reaction where light elements interact with alpha emitters.

The maximum concentrations are measured at the bottom of the logged interval at 13.5 ft, approximately 3.5 ft above the depth where the driller reported contamination. Therefore, it is likely the concentrations are much higher at 17 ft.

This borehole was logged in 1993 by Westinghouse Hanford Company using the RLS spectral gamma logging system. Maximum depth achieved in this logging event was 12 ft and no detections of manmade radionuclides were reported.

List of Log Plots:

Depth Reference is ground surface
Depth Scale - 20 ft/inch

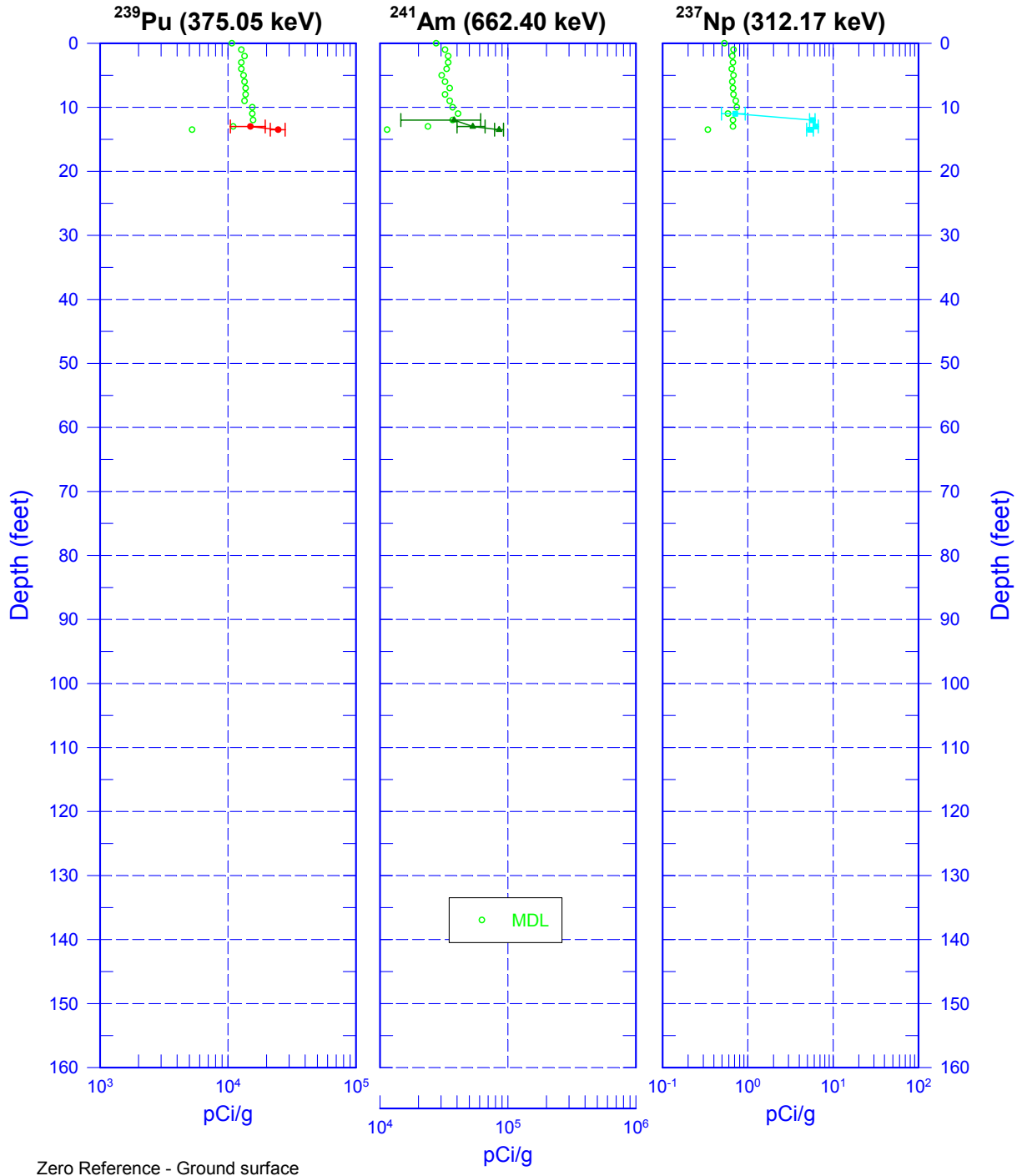
Manmade Radionuclides
Natural Gamma Logs
Combination Plot (0-120 ft)
Combination Plot (0-60 ft)
Total Gamma &, Dead Time

¹ GWL – groundwater level

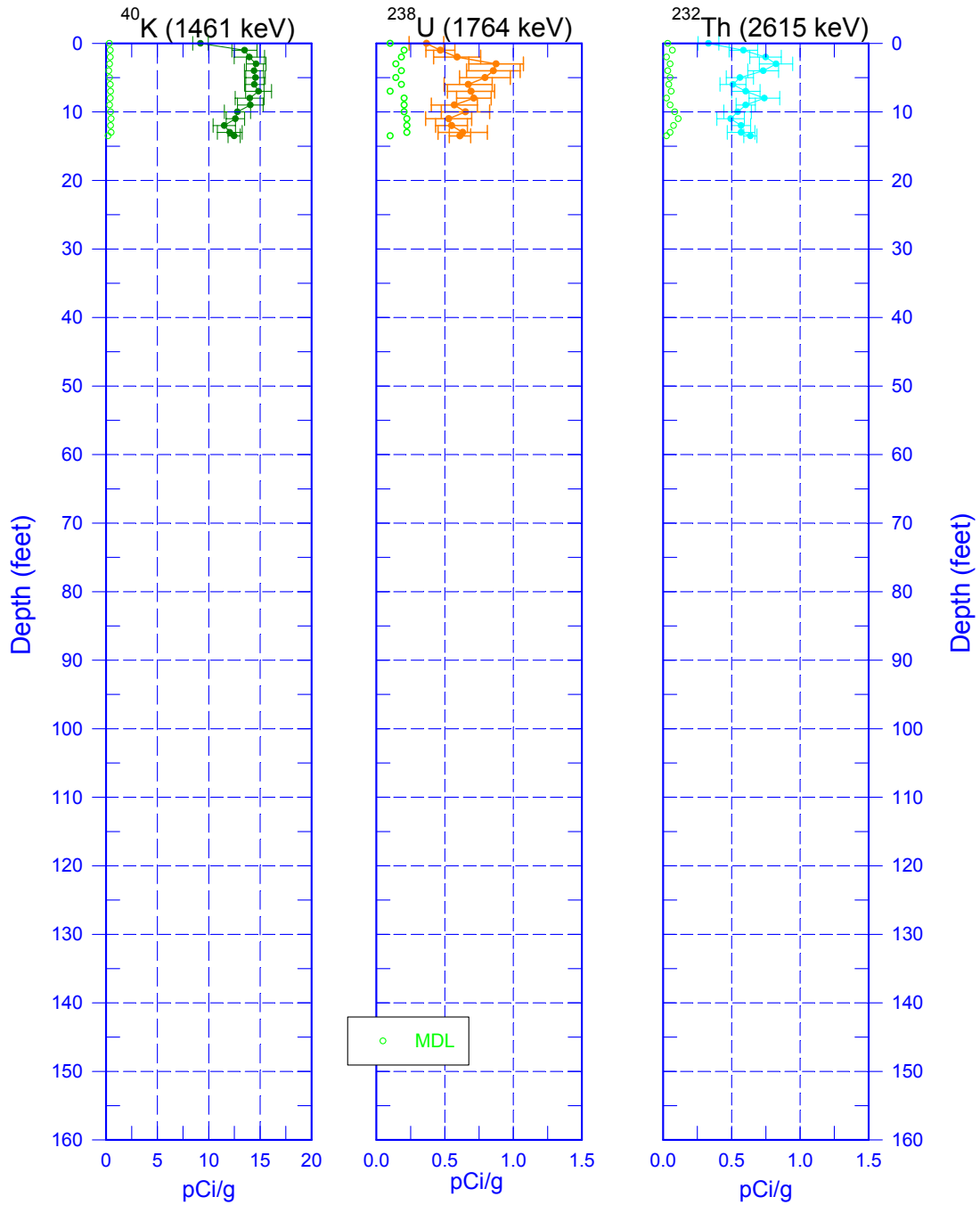
² N/A – not applicable

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Manmade Radionuclides

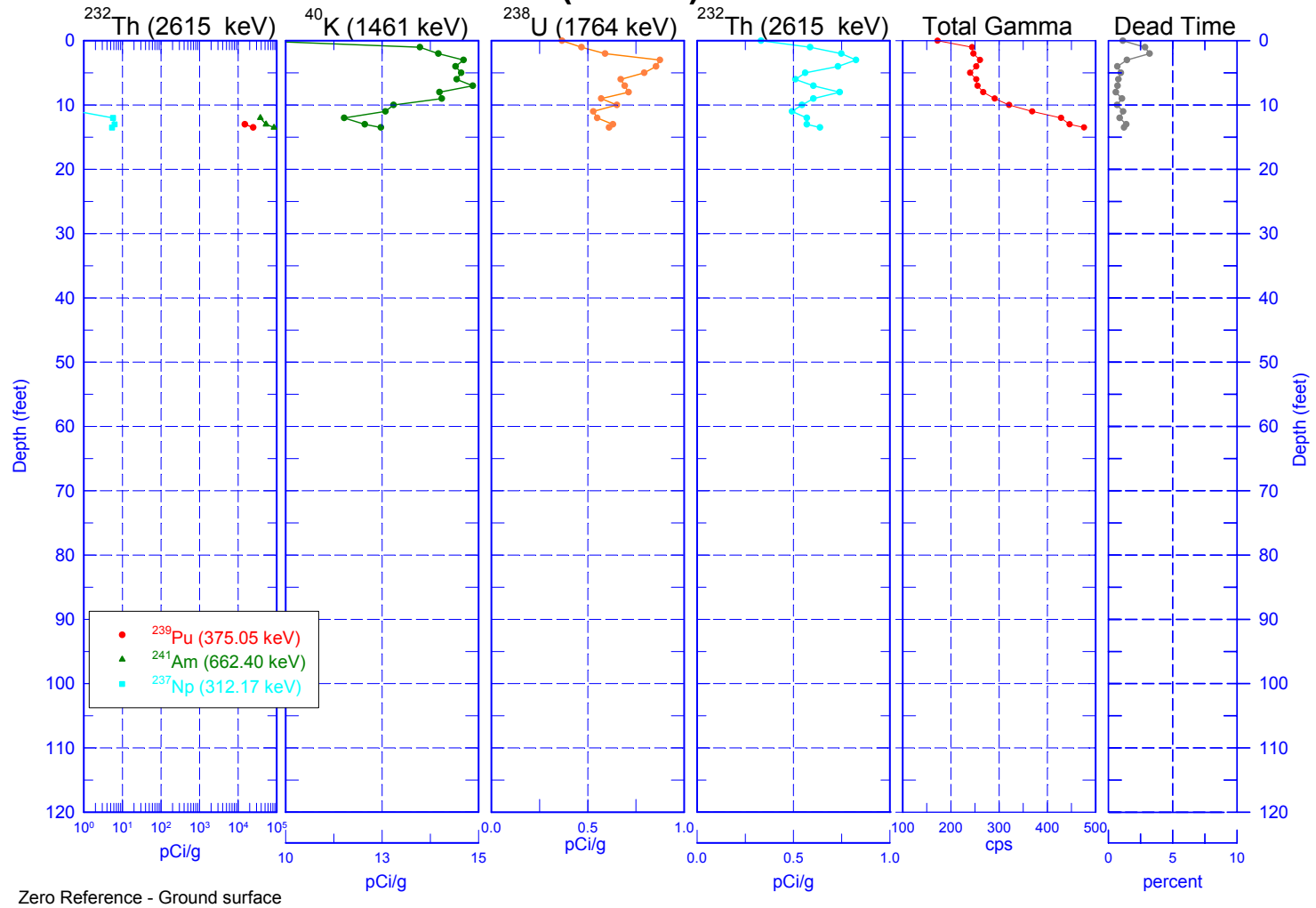


299-W18-78 (A7561) Natural Gamma Logs

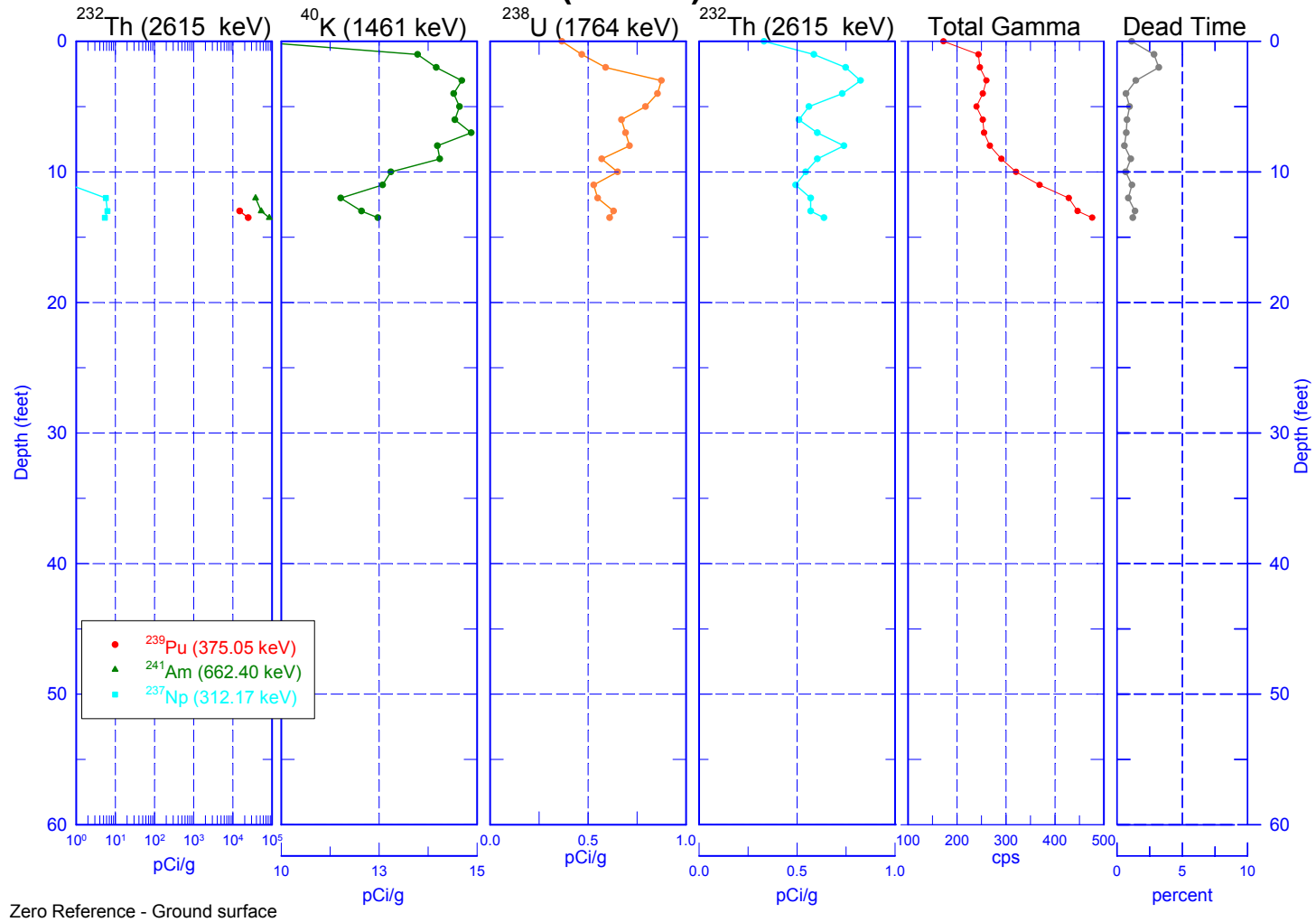


Zero Reference = Ground surface

299-W18-78 (A7561) Combination Plot

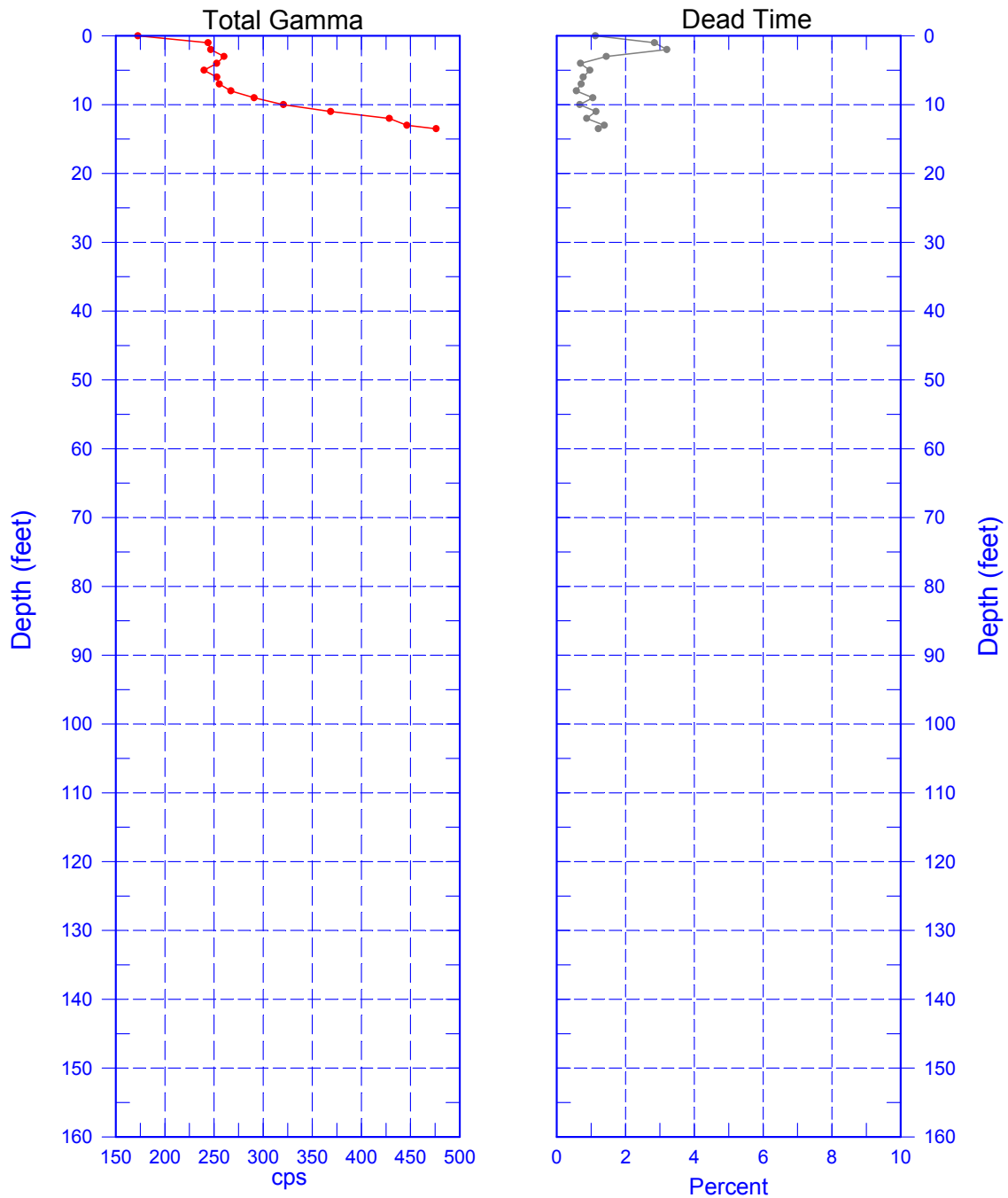


299-W18-78 (A7561) Combination Plot



299-W18-78 (A7561)

Total Gamma & Dead Time



Reference - Ground surface